

CLAIM AMENDMENTS

Claims 6, 14 and 15 have been amended to conform their terminology to that of the claims from which they depend.

RESTRICTION AND ELECTION REQUIREMENT

The Examiner has required restriction under 35 U.S.C. 121 and 372 based on PCT Rule 13.1 and, pursuant to 37 CFR 1.499, election of a single one of the following inventions as identified by the Examiner.

Group I, claims 1-9, drawn to a timing element comprising a delay composition in a sheath, the delay composition comprising a reactive polymer material.

Group II, claims 10-18, drawn to a method of making a timing element comprising a reactive polymeric material in a sleeve.

Group III, claims 19-21, drawn to an initiator comprising a timing element, the timing element comprising a reactive polymeric material.

Group IV, claims 22-24, drawn to a method of making a delay initiator comprising a reactive resin.

Group V, claims 25-27, drawn to a method of making a delay initiator comprising a reactive polymeric material.

Group VI, claim 27, drawn to a segment of reactive polymeric material.

The Examiner contends that the inventions listed as Groups I - VI do not relate to a single inventive concept under PCT Rule 13.1 because the shared technical feature of each of the claims is a reactive polymer material used as a timing element. The Examiner further contends that this feature is not novel or unobvious over the prior art at least in view of the combination of Knowlton et al. (2002/0035945 A1) in view of Manzara (U.S. 5,681,904) and/or Arpin et al. (U.S. 5,945,627) and/or Shilliday et al. (U.S. 6,886,469 B2).

ELECTION WITH TRAVERSE

Applicants elect, with traverse, claims 1-9 identified as Group I by the Examiner.

Reasons for Traversal

1. The restriction requirement is respectfully traversed because, the Examiner's statement to the contrary notwithstanding, none of the cited art, alone or in combination, shows or suggests the use of a reactive polymer such as a glycidyl azide polymer ("GAP") employed as a timing element.
2. Knowlton et al. discloses "a thermal switch" to control the time to function propellant, pyrotechnic and explosive devices, i.e., a timing element. However, there is no disclosure in Knowlton et al. of utilizing a reactive polymer of any kind for such purpose. The Examiner refers to the IPER submitted by Applicants as part of the 2/24/10 Information Disclosure Statement, apparently for the proposition that Knowlton et al. discloses in paragraph [0080] a "delay composition comprising a resin such as vinyl alcohol acetate resin." However, as set forth in paragraph [0080] of Knowlton et al., this inert resin is simply a binder for a metal fuel and (a blend of) oxidizers used as the pyrotechnic timing composition. In this regard, see paragraph [0025] of Knowlton et al., which discloses a variety of autoignition materials, preferably mixtures of an oxidizer composition and a powdered metal fuel. None of the disclosed autoignition materials is a reactive polymer, nor is the resin binder. At paragraph [0015] of Applicants' specification, reactive polymeric materials are defined as cross-linked polymeric materials "that have reactive pendant groups such as azido groups, nitrate groups, triazoline groups and/or triazole groups chemically bonded to the polymer backbone." Paragraph [0015] continues to distinguish these reactive resins from "a relatively inert polymeric material or resin having pulverulent reactive material physically blended therein." The latter quoted material clearly describes the Knowlton et al. disclosure of a pulverulent metal fuel and oxidizer in a binder of an (inert) "resin, such as vinyl alcohol acetate resin."
3. Manzara's reactive GAP material would not be viewed by the skilled person as a substitute for the inert resin binder of Knowlton et al. Manzara does not remedy the deficiency of Knowlton et al. Manzara discloses GAP polymers *per se* and does not disclose or suggest use of the GAP polymers as a timing device. At column 2, lines 9-25, Manzara discloses various uses for the GAP polymers including "as a gas-generating propellant such as a component of an air bag apparatus." All the disclosed uses are as

a high energy material or a destructible adhesive and are therefore incompatible with the relatively slow reaction rate required of a timing element. If anything, Manzara teaches away from the use of GAP material as a timing element.

4. In Shilliday et al. a GAP polymer is disclosed only as an example of a gas-generating polymer utilized as a binder for the reactive charge in a gas-generating system such as automotive restraint (air bag) systems. See column 5, lines 14-19 of Shilliday et al. Shilliday et al., like Manzara, in fact teaches away from the concept of a timing element by its use of a GAP polymer binder in a device in which extremely rapid reaction is desired, and obtained. The rapid reaction is needed to nearly instantaneously form a gas to fill the automotive air bag upon crash impact. This is the antithesis of a timing element. A timing element requires a relatively slow and controlled rate of reaction in order to establish a precise delay time before passage of an initiation signal to an explosive or other initiation device.

5. Arpin et al., like Knowlton et al., discloses a fuel and oxidizer composition but lacks any disclosure of a reactive polymer.

6. It is respectfully submitted that the reactive polymeric material timer element as defined in Applicants' claims 1-27 is a novel, unobvious and unifying single inventive concept.

In view of foregoing, it is respectfully requested that the restriction and election requirement be withdrawn in its entirety.

Respectfully submitted,

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